

ORIGINAL RESEARCH COMMUNICATION

Serum zinc and pneumonia in nursing home elderly^{1, 2, 3}

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Background: Zinc plays an important role in immune function. The association between serum zinc and pneumonia in the elderly has not been studied.

Objective: The objective was to determine whether serum zinc concentrations in nursing home elderly are associated with the incidence and duration of pneumonia, total and duration of antibiotic use, and pneumonia-associated and all-cause mortality.

Design: This observational study was conducted in residents from 33 nursing homes in Boston, MA, who participated in a 1-y randomized, double-blind, and placebo-controlled vitamin E supplementation trial; all were given daily doses of 50% of the recommended dietary allowance of essential vitamins and minerals, including zinc. Participants with baseline ($n = 578$) or final ($n = 420$) serum zinc concentrations were categorized as having low ($<70 \mu\text{g/dL}$) or normal ($\geq 70 \mu\text{g/dL}$) serum zinc concentrations. Outcome measures included the incidence and number of days with pneumonia, number of new antibiotic prescriptions, days of antibiotic use, death due to pneumonia, and all-cause mortality.

Results: Compared with subjects with low zinc concentrations, subjects with normal final serum zinc concentrations had a lower incidence of pneumonia, fewer (by almost 50%) new antibiotic prescriptions, a shorter duration of pneumonia, and fewer days of antibiotic use (3.9 d compared with 2.6 d) ($P \leq 0.004$ for all). Normal baseline serum zinc concentrations were associated with a reduction in all-cause mortality ($P = 0.049$).

Conclusion: Normal serum zinc concentrations in nursing home elderly are associated with a decreased incidence and duration of pneumonia, a decreased number of new antibiotic prescriptions, and a decrease in the days of antibiotic use. Zinc supplementation to maintain normal serum zinc concentrations in the elderly may help reduce the incidence of pneumonia and associated morbidity.

Key Words: Serum zinc • nursing home elderly • pneumonia • mortality • antibiotic use

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L. Curtis

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